Display system with a stationary supporting base

The invention relates to a display system including a stationary supporting base and a display device, such as a television set or a monitor, supported by the supporting base.

Such a system is generally known, the supporting base being formed by a table, a cupboard, a stand, a supporting arm fixed to a wall or a ceiling, or another support. The display device is provided with a display screen. In such a system, the display device has a fixed position as to location and orientation relative to a viewer viewing the display screen.

In many cases, the permanent adjustment of the location and the orientation of the display device, particularly its screen, is not convenient to the viewer. In some cases, the supporting base is provided with mechanical means, such as screws, to change the position of the display device into another position. However, this way of adjusting is quite cumbersome.

It is an object of the invention to improve the known display system so that its position can be changed in a simple and accurate way. This object is achieved in the display system according to the invention, which system includes a stationary base, a display device movably supported by the supporting base and an electromagnetic positioning unit for positioning the display device relative to the supporting base. The presence of the electromagnetic positioning unit offers the opportunity to adjust the position of the display device, and thus of the display screen, at each moment wished by a viewer. Due to the fact that the display device is movably arranged, i.e. it has a movable bearing, with respect to the supporting base, the display device can be moved, for example rotated, tilted and/or shifted, relative to the supporting base under the influence of magnetic forces generated by the electromagnetic positioning unit when this unit is energized. It is favorable to provide the system with a remote control function for controlling the electromagnetic positioning unit. This remote control function may be incorporated in the remote control, known per se, being usually a part of a display system, but may of course be a separate remote control. In order to lock the display device in a desired position obtained after adjustment by means of the positioning unit, it is favorable to provide the display system with a locking unit, particularly a locking unit comprising a solenoid. It is convenient to control the locking unit by means of the remote control. The display device of the system according to the invention may be a

monitor or television set of a conventional kind or of a more modern kind, in which case the conventional picture tube has been replaced by a more sophisticated display unit, such as an LCD.

In a practical embodiment of the display system according to the invention, the supporting base is provided with a rod-shaped guide for guiding the display device. During use, the guide will usually extend in a horizontal or a vertical direction, but also other directions may be suitable. The guide may be straight or curved, dependent on the application.

In a further practical embodiment of the display system according to the invention, the electromagnetic positioning unit includes a translation actuator for translating the display device along the rod-shaped guide and/or a rotation actuator for rotating the display device round the rod-shaped guide. Well-known actuator devices are preferably used for realizing the desired movements of the display device. This makes the inventive display system simple and efficient, and thus an attractive positioning unit is obtained. The obtainable translational and rotational movements are generally sufficient to find a suitable position, i.e. a location and an orientation, of the display device, and thus of its display screen, with regard to the viewer.

The actuators may be designed as is defined in claims 4 and 5, but also other systems of magnets and coils are possible. If needed for actuating, the rod-shaped guide may be made of a magnetic material. It is also possible to make use of an actuator unit which is designed in such a way that it can perform both desired movements.

Further embodiments of the display system according to the invention are described in claims 6 to 9.

With reference to the claims, it is to be noted that various characteristic features as defined in the set of claims may occur in combination.

The above-mentioned and other aspects of the invention are apparent from and will be elucidated, by means of non-limitative example, with reference to embodiments described hereinafter.

In the drawings:

Figure 1 schematically illustrates in a perspective view the general structure of the display system according to the invention, and

Figure 2 schematically illustrates embodiments of the actuators applied in the display system according to the invention.

The display system according to the invention as disclosed in Figure 1 has a stationary supporting base 1 and a display device 3 movably supported by the supporting base. The display device 3, which has a screen 3a, is an LCD TV set in this example. Such a set is lighter in weight compared to CRT TV sets or Plasma TV sets. The supporting base 1 includes a rod-shaped guide 5 serving as a guiding and mounting body for the display device 3. In this example, the guide 5 is fixed to a base 6. The display system according to the invention further has an electromagnetic positioning unit 7 serving as a drive for the display device 3. The display system includes a first actuator, being a translation actuator, for moving the display device along the guide and a second actuator, being a rotation actuator, for moving the display device round the guide. Both actuators may be known actuator devices. The invention does not relate to the actuator as such. The movements along and round the guide 5 are indicated by the arrows T and R, respectively.

Both actuators are positioned or at least partly positioned in a housing 8 attached to the display screen 3a. It is also possible to make use of a housing 8 in which the screen 3a is integrated.

The housing 8 may be provided at both axial ends with a sleeve, wherein the sleeves serve for sliding and stability. Instead of sleeves, sliding bearings may be used.

In order to lock the display device 3 in a reached and/or desired position, the display system is provided with a locking device 9, which in this example includes a solenoid known per se.

Although not shown in the drawings, the shown example of the display system according to the invention includes a remote control for controlling the positioning unit 2 and the locking device 9. Well-known control circuitry may be applied in such a remote control.

Figure 2 shows an embodiment of the first actuator, indicated by the numeral 7t, and an embodiment of the second actuator, indicated by the numeral 7r, of the electromagnetic positioning unit 7. The first actuator 7t comprises a permanent-magnet section 7t1 attached to the rod-shaped guide 5 and a coil section 7t2 secured to the display device 3 and placed in the magnetic field of the permanent-magnet section 7t1. By energizing the coil section 7t2, axial forces are generated for translating the display device 3 along the guide 5. The second actuator 7r comprises a permanent-magnetic part 7r1 fixed to the display device 3 and a coil part 7r2 secured to the rod-shaped guide 5 and placed in the magnetic field of the permanent-magnetic part 7r1. By energizing the coil part 7r2, tangential forces are generated for rotating the display device 3 round the guide 5. In this way, the

displacements of the display device are obtained in a controlled way and are performed in a noiseless manner.

It is expressly noted that the invention is not limited to the embodiments shown herein. For example, various available actuator devices may be used.